



<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/560,848	ROOVERS ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	THOMAS W. IRVIN	3657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 July 2009.
- 2a) This action is **FINAL**.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 2-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 2-36 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-17 and 26-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 26 recite "at an inner side". It is not clear whether the inner side of the chain or the sensor is being claimed. Examiner suggests amending the claims similar to the amendments made in claim 21 to clearly recite what inner surface is being claimed.

Claim 6 recites the limitation "said force sensor" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 2, 18, and 21 recites the limitations "the plane" and "the component". There is insufficient antecedent basis for these limitations in the claims.

### ***Claim Objections***

Claims 2-36 are objected to because of the following informalities: the claims should be written as complete sentences, starting with "A transmission system..." or "A method for measuring..."; in claim 6 -- wherein -- should be added before "said force sensor..."; in claim 7 "centre" is misspelled. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2-7, 10-13, 19-24, 26-29, 33, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Searle (GB 2312193).

In Re claim 2, Searle discloses a transmission system (fig. 1), comprising: a drive wheel (B1), a driven wheel (B2), and a coupling chain (A) having a first chain half (upper) and a second chain half (lower); a tension difference measuring device comprising a transverse force sensor (C) arranged within the span of the chain, provided with measuring means for providing a measurement signal that is proportional to the forces exerted to the sensor by the chain parts; wherein the transverse force sensor is arranged between the drive wheel and the driven wheel, and has a first contact face (see arrow) touching the first chain half at an inner side of the chain, and a second contact face (not shown) touching the second chain half at an inner side of the chain.

In Re claims 3-7, and 11-13, the examiner understands the system to include a supporting arm holding the sensor, understood to be a switch, which measures a vertical deformation of the supporting arm, holding the sensing wheel, by depressing the switch after a predetermined distance (see fig. 1).

In Re claim 10, said measuring means measure a displacement of the sensing wheels (see fig. 1).

In Re claims 19, 20, 33, and 34, the vehicle is a bicycle.

In Re claim 21, given the structure of the transmission system of Searle, as described above, the method steps would be inherently performed during normal operation of the device.

In Re claims 22-24, the examiner understands the system to include a supporting arm holding the sensor, understood to be a switch, which measures a vertical deformation of the supporting arm, holding the sensing wheel, by depressing the switch after a predetermined distance (see fig. 1).

In Re claim 26, Searle disclose a tension difference measuring system comprising a drive wheel (B1), a driven wheel (B2), and a coupling chain (A) having a first chain half (upper) and a second chain half (lower); said measuring system comprising: a transverse force sensor (C) having a first contact face (upper) and a second contact face (lower), suitable for placing between the drive wheel and the driven wheel within the span of the coupling chain.

In Re claims 27 and 28, the examiner understands the system to include a supporting arm holding the sensor, understood to be a switch, which measures a vertical deformation of the supporting arm, holding the sensing wheel, by depressing the switch after a predetermined distance (see fig. 1).

In Re claim 29, see fig. 1.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Searle (GB 2312193).

Searle fail to disclose a sound production counteracting material. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sensor wheels to be manufactured of a sound production counteracting material as a matter of simple design choice to quiet ti transmission. Also note MPEP Section 2144.07 states that the selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination.

Claim 8, 9, 16, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Searle (GB 2312193) as applied to claims 2 and 10 above, and further in view of Todd et al. (2003/0087713).

In Re claims 8 and 9, Searle fail to disclose two convex surfaces in contact with the chain.

Todd et al. teach using, in a chain transmission, a shoe (30) engaging the chain (16) to measure tension on the chain. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the sensor wheel of

Searle for two convex shoes, as taught by Todd et al., in order to increase the contact with the chain, and thus the sensitivity to actual tension imparted by the rider, and not unintentional vibration.

In Re claims 16 and 35, Searle fail to teach a strain gauge.

Todd et al. teach using strain gauges (35,135) with a tension measuring transmission device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the switch of Searle with a strain gauge, as taught by Todd et al., as it provides a more accurate measurement of the deflection of the sensor wheel and can increase the sensitivity to actual tension imparted by the rider, and not unintentional vibration.

Claims 14, 15, 31, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Searle (GB 2312193) as applied to claims 2 and 27 above, and further in view of Nicolau (3,832,899).

In Re claims 14 and 15, Searle fail to teach the specifics of the support arm.

Nicolau teaches a dynamometrical deflection measuring device having a support arm (5,6) directed substantially parallel to the plane defined by the rotation axes of the drive wheel (2) and the driven wheel (3) and directed substantially parallel to the plane defined by the coupling chain (1) (see Fig. 2). A sensor (7) is adapted to measure a bending of the supporting arm. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the transmission device of Searle to include the support arrangement taught by Nicolau, in order to provide a compact

structure for supporting the sensor wheel. Examiner notes that the entire support system would be substantially parallel to the coupling chain plane and within the drive and driven wheels.

In Re claim 15, Searle, as modified, fail to teach a support arm being fixed to the wheel axle of one of the drive or driven wheel, however, it would have been obvious, given the shape and location of the supports and sensor wheel, to have attached the fixed length support arm (5) to one of the axles of the drive or driven wheels, in order to reduce packaging space and utilize existing support mounts.

In Re claim 31, Searle fails to disclose specifics of the support arm.

Nicolau teaches a dynamometrical deflection measuring device having a two-part primary/secondary support arm (5,6), wherein one of the support arms includes at least two bridge parts, understood to be the mounting points. A sensor (7) is mounted on a side of one of the support arm bridge parts. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the transmission device of Searle to include the support arrangement taught by Nicolau, in order to provide a compact structure for supporting the sensor wheel.

In Re claim 36, the dynamometric transducer of Nicolau is understood to meet the limitations of a strain gauge.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Searle (GB 2312193) in view of Hordnes et al. Todd et al. (5,445,036).

Searle discloses a transmission system comprising: a drive wheel (B1), a driven wheel (B2), and a chain (A), a tension difference measuring device (C) comprising a transverse force sensor, understood to be a switch. Searle fails to teach that the sensor is one of the drive or driven wheels.

Hordnes et al. teach a torque sensor with the concept of having the transverse force sensor being one of the drive or driven wheels (see Fig. 1), and wherein the measuring means (36) is adapted for measuring the force exerted to the wheel concerned in a direction substantially perpendicular to the plane defined by the rotation axes of the drive wheel and the driven wheel (col.3, lines 39-47).

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Searle (GB 2312193) as applied to claim 22, and further in view of Roovers et al. (WO 0130643).

In Re claim 25, Searle fails to disclose a sensor on a bearing of the sensor wheel.

Roovers et al. teach a transverse force sensor (74) rotatably mounted in a bearing (70), wherein the sensor measures the forces caused in the bearing by the chain force (abstract) (p. 25 line 33 – 7 and fig. 9A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the transmission system of Searle to include a bearing mounted force sensor to more accurately measure the reaction forces caused by the chain tension imparted by the rider, and decrease the likelihood of unintentionally measuring related chain vibrations.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Searle (GB 2312193) as applied to claim 27, and further in view of Venema (3,992,932).

In Re claim 30, Searle fail to disclose specifics of the support arm.

Venema teach, in a torque measuring system for a chain transmission, including a support (20,21) having an elongate hole (adjacent nuts (24,25) and axles (not labeled) for mounting the rollers to the support arm (figs. 1 and 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included an axle and associated holes in the support arm of Searle, as taught by Venema, simply for supporting the sensor wheel. Examiner notes that applicant has not defined what the longitudinal direction is, and thus examiner interprets the longitudinal direction to be parallel to the axle.

### ***Response to Arguments***

Applicant's arguments, see Remarks, filed 02 July 2009, with respect to the rejection(s) of claim(s) 2-36 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

In response to applicant's arguments regarding measuring the force difference, the examiner points to fig. 1 of Searle, which shows that the sensor wheel is in contact with the upper and lower halves of the chain, and when a pedaling force is applied, the resulting tension increase in the upper half, and tension decrease in the lower half

results in the movement of the sensor wheel. This movement is understood to be due to the difference in the tension forces of the upper and lower chain halves.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS W. IRVIN whose telephone number is (571)270-3095. The examiner can normally be reached on Mon-Fri 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on (571) 272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas W. Irvin/  
Examiner, Art Unit 3657

/Bradley T King/  
Primary Examiner, Art Unit 3657